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The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JIMMY H. DAVIS

Appeal No. 1997-4087
Application No. 08/298,375¹

ON BRIEF

Before BARRETT, FLEMING, and BARRY, Administrative Patent Judges.

BARRY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the final rejection of claims 1-19. We reverse.

¹ The application was filed on August 30, 1994. It is a continuation of Application Serial No. 08/007,746, which was filed on January 22, 1993, and is now abandoned.

BACKGROUND

The invention at issue in this appeal relates to a print head used in an ink jet printer. More specifically, the invention is a technique for adhesively bonding the orifice plate and the channeled body of such a print head.

Pressure inside a conventionally manufactured print head can separate the print head's orifice plate from its channeled body. Heretofore, the problem of separation has demanded the use of adhesives having a great bonding strength. Because such adhesives are costly, however, their use increases the cost of manufacturing a print head. The invention strengthens the bond between the orifice plate and channeled body of an ink jet print head without requiring the use of the costly adhesives.

Claim 1, which is representative for our purposes, follows:

1. A method of fabricating a print head assembly for use in an ink jet printer, said method comprising the steps of:

providing a print head body portion formed from a piezoelectric material and having a front end surface, and a spaced interior series of parallel ink receiving chambers opening outwardly through said front end surface;

providing an orifice plate having a rear side surface;

forming spaced apart adhesive receiving openings in said orifice plate and said front end surface of said body portion;

applying a layer of adhesive material between said front end surface of said body portion and said rear side surface of said orifice plate;

forcing said orifice plate and said body portion toward one another in a manner reducing the thickness of said layer of adhesive material and causing portions of said layer of adhesive material to flow into said adhesive openings in both said orifice plate and said body portion, to thereby strengthen the adhesive bond between said orifice plate and body portion by increasing the total contact area between said adhesive material and said orifice plate and body portion; and

permitting the adhesive material to harden.

Besides the appellant's admitted prior art (AAPA), the reference relied on in rejecting the claims follows:

Myers
1960.

Auslegeschrift No. 1078585

March 31,

Claims 1-19 stand rejected under 35 U.S.C. § 103 as obvious over AAPA in view of Myers. Rather than repeat the arguments of the appellant or examiner in toto, we refer the reader to the briefs and answer for the respective details thereof.

OPINION

In reaching our decision in this appeal, we considered the subject matter on appeal and the rejection and evidence advanced by the examiner. Furthermore, we duly considered the arguments of the appellant and examiner. After considering the totality of the record, we are persuaded that the examiner erred in rejecting claims 1-19. Accordingly, we reverse.

Regarding claims 1-6, 9, and 10, the appellant makes the following argument.

Myers does not disclose a structure wherein two adhesively intersecured elements have adhesive receiving openings formed in each of them ... wherein adhesive material is flowed into the adhesive receiving openings in both of the two elements. No combination of the art discussed on pages 1-2 of the present specification and the Myers reference disclosure meets these limitations.
(Appeal Br. at 14-15.)

Regarding claims 7, 8, 9, and 10, he makes the following, similar argument. "Nor does either reference disclose causing portions of the adhesive to flow into the openings in the orifice plate and body portion, and increasing the total contact area of the adhesive material with both the orifice plate and the body portion." (Id. at 19.)

Regarding claims 13-17, the appellant makes the following, similar argument.

Myers does not disclose a structure wherein two adhesively intersecured elements have adhesive receiving openings formed in each of them, wherein ... adhesive material extends into the adhesive receiving openings in both of the two elements. Additionally, no combination of the art discussed on pages 1-2 of the present specification and the Myers reference disclosure meets these limitations. (Id. at 8.)

Regarding claims 18 and 19, the appellant makes the following, similar argument. "Nor does either reference disclose causing portions of the adhesive to flow into the openings in the orifice plate and body portion, and increasing the total contact area of the adhesive material with both the orifice plate and the body portion." (Id. at 23-24.)

The examiner's reply follows.

Myers does teach a structure wherein a plate (18) is perforated wherein "additional adhesion is achieved ... by means of the excess thermoplastic material, which penetrates into the holes when the printing form is pressed, together with the second adhesive layer..." (pg. 4 of translation); therefore, Myers teaches the concept of achieving additional adhesion wherein it would be within expedient of one of ordinary skill in the art that to have another structure with adhesive receiving openings would further strengthen the adhesion strength between two structures, and furthermore since it has been held that to duplicate parts for a multiplied effect involves, only routine skill in the art.
(Examiner's Answer at 6-7.)

We agree with the appellant.

Claims 1-10 each specifies in pertinent part the following limitations:

forming spaced apart adhesive receiving openings in said orifice plate and said front end surface of said body portion;

applying a layer of adhesive material between said front end surface of said body portion and said rear side surface of said orifice plate;

forcing said orifice plate and said body portion toward one another in a manner ... causing portions of said layer of adhesive material to flow into said adhesive openings in both said orifice plate and said body portion

Claims 11 and 12 each specifies in pertinent part the following limitations:

forming a spaced apart series of adhesive bonding holes transversely through said orifice plate;

forming a spaced apart series of adhesive bonding openings in said body portion, said adhesive bonding openings extending inwardly through said front end surface of said body portion and being alignable with said adhesive bonding holes in said orifice plate;

applying a layer of adhesive material having a thickness between said front end surface of said body portion and said rear side surface of said orifice plate;

forcing said orifice plate and said body portion toward one another in a manner ... causing portions [of said adhesive material] ... to flow into said adhesive bonding holes and said adhesive bonding openings

Claims 13-17 each specifies in pertinent part the following limitations:

said orifice plate and said front end surface of said body portion having a spaced series of adhesive bonding openings formed therein ...; and

an adhesive material having a first portion positioned between and adhesively intersecuring said rear side surface of said orifice plate and said front end surface of said body portion, and a spaced series of second portions connected to said first portion, said second portions extending into respective ones of said adhesive bonding openings in both said orifice plate and said front end surface

of said body portion, and being adhered to said interior side surface portions thereof.

Giving the limitations their broadest reasonable interpretation, each of the claims recites forming adhesive receiving openings in both a print head body and an orifice plate and bonding the two elements together, with the adhesive extending into the openings in both of the elements.

"Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor."

Para-Ordnance Mfg. v. SGS Importers Int'l, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995) (citing W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1551, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)). The mere fact that prior art may be modified in a manner suggested by an examiner, moreover, does not make the modification obvious unless the prior art suggested the desirability thereof. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

Here, the examiner fails to identify a sufficient suggestion to modify the combination of AAPA and Myers to obtain the claimed invention. She admits that AAPA "does not disclose ... adhesive flowing into respective adhesive receiving openings of the body portion and the orifice plate to thereby strengthen the adhesive bond [therebetween]."

(Examiner's Answer at 4.) The examiner also admits, "'Myers does not disclose a structure wherein two adhesively intersecured elements have adhesive receiving openings formed in each of them, ..., or wherein adhesive material extends into the adhesive openings in both of the two elements'" (Id. at 6.) In addition, she admits, "AAPA in view of Myers does not disclose two perforated plates for the adhesive to flow into its respective holes" (Id. at 5.)

These admissions understate the teachings of Myers. The reference teaches adhesively connecting a thermoplastic plate (16) to a metal plate (18) to manufacture a printing form. The metal plate (18) is perforated with holes (22) over its entire surface. Adhesive that is applied to the perforated metal plate (18) flows into the holes thereby coating the

walls of the holes (22). Translation, p. 8. When the form is heated and compressed in a press (24, 30), the thermoplastic material (16) penetrates into the holes (22). Id. at pp. 8-9.

Myers does not teach forming adhesive receiving openings in both of two elements and bonding the two elements together, with the adhesive extending into the openings in both of the elements. To the contrary, the reference teaches deforming one of two elements, so that the deformable element flows into holes formed in the other element. An adhesive is deposited between the two elements both interiorly and exteriorly of the holes. The portion of the deformable element that flows into the holes of the other element serves to increase the surface area between the two plates. The adhesive intersecures the plates both interiorly and exteriorly of the holes. In short, it is the complementary engagement of the elements themselves that interlocks the elements of Myers rather than the adhesive that extends between and flows into the openings of the elements in the claims. Accordingly, we cannot conclude that the combination of AAPA and Myers would have suggested forming

adhesive receiving openings in both a print head body and an orifice plate and bonding the two elements together, with the adhesive extending into the openings in both of the elements, as claimed. The examiner's conclusion of obviousness impermissibly relies on the appellant's teachings or suggestions to modify the references.

For the foregoing reasons, the examiner has not established a prima facie case of obviousness. Therefore, we reverse the rejection of claims 1-19 under 35 U.S.C. § 103.

CONCLUSION

To summarize, the examiner's rejection of claims 1-19
under 35 U.S.C. § 103 is reversed.

REVERSED

LEE E. BARRETT)	
Administrative Patent Judge)	
)	
)	
)	
)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
)	
LANCE LEONARD BARRY)	
Administrative Patent Judge)	

LLB/sld

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BARRY

APPEAL NO. 1997-4087 - JUDGE

APPLICATION NO. 08/007,746

APJ BARRY

APJ BARRETT

APJ FLEMING

DECISION: **REVERSED**

Prepared by: S. DAVIS

DRAFT TYPED: 24 Jul 00

FINAL TYPED:

Gloria, note the following instructions:

Do NOT change style of citations.

Do insert claim and reference(s).

Do check quotations.

Do proofread

Attach copy of any cited translations.